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10/599,406	09/28/2006	Ronaldus Maria Aarts	NL 040326	8423

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EXAMINER

ELBIN, JESSE A

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

06/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,406

Applicant(s)

AARTS ET AL.

Examiner

JESSE A. ELBIN

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 14 January 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed January 14, 2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Figure 5, and the corresponding description of Figure 5, includes detail not included in the specification as originally filed. The originally filed claims state "The enclosure according to claim1, comprising two or more transducers"; however the location, size, orientation, etc. is not described in a manner to support the detail of Figure 5. Further, page 4, lines 7-11 refer to an enclosure with multiple transducers in a manner similar to the added paragraph; however the detail to support Figure 5 is not present.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 9, and 11-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Furukawa (US Patent 4,953,655 ('655)).

Regarding claim 1, Furukawa teaches an enclosure (Fig. 11A) for an acoustic transducer (Fig. 12 #4), the enclosure comprising a first chamber (Fig. 11A #11) for accommodating the acoustic transducer and a second chamber (Fig. 11A #12), which first (#11) and second (#12) chambers are acoustically coupled by a coupling section (Fig. 11A #8), wherein the first chamber (#11) and the second chamber (#12) are spaced apart (Fig. 11A), wherein the coupling section (#8) and the first chamber (#11) couple along a first wall (vertical wall) of the first chamber (Fig. 11A #11), the enclosure further comprising an opening arranged for the transducer (Fig. 11A, 11B), wherein the opening being positioned along a second wall (horizontal wall; Fig. 11A) of the first chamber (#11) that extends in a direction perpendicular to the first wall (Fig. 11A).

Regarding claim 2, Furukawa remains as applied above.

Furukawa further teaches a coupling between the coupling section (Fig. 11A #8) and the first chamber (Fig. 11A #11) has a smaller cross section than the first chamber (Fig. 11A).

Regarding claim 9, Furukawa remains as applied above.

Furukawa further teaches a transducer (Fig. 11A), wherein the transducer is within the first chamber (#11) located at the opening of the first chamber (Fig. 11A).

Regarding claim 11, Furukawa teaches an audio system enclosure (Fig. 16), comprising: at least one acoustic transducer (Fig. 16 #4); and an enclosure including: a

first chamber (Fig. 16 'L') for accommodating the acoustic transducer (#4), a second chamber (Fig. 16 'R'), and a coupling section (Fig. 16 #8) having an opening arranged for the transducer (Fig. 16), wherein the first ('L') and second ('R') chambers are acoustically coupled by the coupling section (both labeled #8), wherein the first chamber ('L') and the second chamber ('R') are spaced apart (Fig. 16), wherein the coupling section (#8) and the first chamber ('L') couple along a first wall of the first chamber (as illustrated by Fig. 11A, vertical wall), and wherein the opening is positioned along a second wall (Fig. 11A horizontal wall) of the first chamber that extends in a direction perpendicular to the first wall (as illustrated by Fig. 11A).

Regarding claim 12, Furukawa remains as applied above.

Furukawa further teaches an amplifier ("speaker unit" 4 is driven by a conventional power amplifier"; '655 col. 7 lines 21-22) for providing an excitation signal to the at least one transducer (Fig. 16 #4), and a signal source (e.g. Fig. 1 'V_{in}').

Regarding claim 13, Furukawa remains as applied above.

Furukawa further teaches the transducer being arranged for operating in a frequency range chosen so as to exclude any higher resonance frequencies of the acoustic system constituted by the transducer and the enclosure ("When the resonant sound passes the essential low-pass type acoustic filter constituted by the second chamber and the opening or the passive vibrating body, a frequency component higher than the cutoff frequency...is cut off; '655 col. 3 lines 36-41).

Regarding claim 14, Furukawa remains as applied above.

Furukawa further teaches the transducer being arranged for operating at the fundamental resonance frequency of the acoustic system constituted by the transducer and the enclosure ("therefore, only the resonant sound from the Helmholtz resonator is essentially radiated outside the cabinet through the opening or the passive vibrating body"; '655 col. 3 lines 41-44).

Regarding claim 15, Furukawa teaches a television set ("Figs. 15 to 17 show modifications wherein the present invention is applied to a 3D (three-dimensional system...Such a 3D system is preferably used in...TV"; '655 col. 9 lines 52-54, 64-65), comprising: at least one acoustic transducer (Fig. 16 #4); and an enclosure including: a first chamber (Fig. 16 'L') for accommodating the acoustic transducer (#4), a second chamber (Fig. 16 'R'), and a coupling section (Fig. 16 #8) having an opening arranged for the transducer (Fig. 16), wherein the first ('L') and second ('R') chambers are acoustically coupled by the coupling section (both labeled #8), wherein the first chamber ('L') and the second chamber ('R') are spaced apart (Fig. 16), wherein the coupling section (#8) and the first chamber ('L') couple along a first wall of the first chamber (as illustrated by Fig. 11A, vertical wall), and wherein the opening is positioned along a second wall (Fig. 11A horizontal wall) of the first chamber that extends in a direction perpendicular to the first wall (as illustrated by Fig. 11A).

Regarding claim 16, Furukawa teaches a monitor ("Figs. 15 to 17 show modifications wherein the present invention is applied to a 3D (three-dimensional system...Such a 3D system is preferably used in...TV"; '655 col. 9 lines 52-54, 64-65), comprising: at least one acoustic transducer (Fig. 16 #4); and an enclosure including: a first chamber (Fig. 16 'L') for accommodating the acoustic transducer (#4), a second chamber (Fig. 16 'R'), and a coupling section (Fig. 16 #8) having an opening arranged for the transducer (Fig. 16), wherein the first ('L') and second ('R') chambers are acoustically coupled by the coupling section (both labeled #8), wherein the first chamber ('L') and the second chamber ('R') are spaced apart (Fig. 16), wherein the coupling section (#8) and the first chamber ('L') couple along a first wall of the first chamber (*as illustrated by Fig. 11A, vertical wall*), and wherein the opening is positioned along a second wall (Fig. 11A horizontal wall) of the first chamber that extends in a direction perpendicular to the first wall (as illustrated by Fig. 11A).

Regarding claim 17, Furukawa remains as applied above.

Furukawa further teaches a coupling between the coupling section (Fig. 16 #8) and the first chamber (Fig. 16 'L') having a smaller cross section than the first chamber (Fig. 16).

Regarding claim 18, Furukawa remains as applied above.

Furukawa teaches a third chamber (Fig. 16 'R') which is acoustically coupled with the first chamber (Fig. 16 'L') or the second chamber (Fig. 16 #12) by a further coupling section (Fig. 16 #8).

Regarding claim 19, Furukawa remains as applied above.

Furukawa further teaches a coupling between the coupling section (Fig. 16 #8) and the first chamber (Fig. 16 'L') having a smaller cross section than the first chamber (Fig. 16).

Regarding claim 20, Furukawa remains as applied above.

Furukawa teaches a third chamber (Fig. 16 'R') which is acoustically coupled with the first chamber (Fig. 16 'L') or the second chamber (Fig. 16 #12) by a further coupling section (Fig. 16 #8).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4-7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa (US Patent 4,953,655 ('655)).

Regarding claim 4, Furukawa remains as applied above.

Furukawa teaches an alternate embodiment wherein the enclosure (Fig. 12) is substantially closed (via passive radiator; Fig. 12 #16).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the enclosure taught by Fig. 11a of Furukawa with the passive radiator taught by Fig. 12 of Furukawa as they are well known obvious variants.

Regarding claim 5, Furukawa remains as applied above.

Furukawa teaches an alternate embodiment comprising a third chamber (e.g. Fig. 16 'R') which is acoustically coupled with the first chamber (Fig. 16 'L') or the second chamber (Fig. 16 #12) by a further coupling section (Fig. 16 #8) for the benefit of producing a stereophonic output.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the enclosure taught by Fig. 11a of Furukawa with the third chamber taught by Fig. 16 of Furukawa for the benefit of producing a stereophonic output.

Regarding claim 6, Furukawa remains as applied above.

Furukawa further teaches the further coupling section (#8) having a smaller diameter than at least one of the first chamber, the second chamber, and the third chamber (Fig. 16).

Regarding claim 7, Furukawa remains as applied above.

Furukawa further teaches the first chamber, the second chamber and the third chamber constituting a three-dimensional arrangement (Fig. 16).

Regarding claim 10, Furukawa remains as applied above.

Furukawa teaches an alternate embodiment comprising two or more transducers (Fig. 16 illustrates two transducers #4).

7. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoefler et al. (US Patent 6,771,787 ('787)) (already of record) in view of Furukawa (US Patent 4,953,655 ('655)).

Regarding claim 1, Hoefler teaches an enclosure (waveguide; Fig. 5a #14a) for an acoustic transducer (#10), the enclosure comprising a first chamber (cavity; Fig. 5a *surrounding* #10) for accommodating the acoustic transducer and a second chamber (Fig. 5a #18₂), which first and second chambers are acoustically coupled by a coupling section (Fig. 5a #18₁), wherein the first chamber and the second chamber are spaced apart (Fig. 5a), wherein the coupling section and the first chamber couple along a first wall of the first chamber (Fig. 5a), the enclosure further comprising an opening arranged for the transducer (Fig. 5a).

Hoefler does not explicitly teach the opening being positioned along a second wall of the first chamber that extends in a direction perpendicular to the first wall.

In the same field of endeavor, Furukawa teaches the opening (i.e. the junction between #11 and #8 in Fig. 11A) being positioned along a second wall (vertical wall) of the first chamber (Fig. 11A #11) that extends in a direction perpendicular to the first wall (i.e. horizontal wall; Fig. 11A) for the benefit of customizing the sound dispersion characteristics based on the requirements of the design.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the orientation of the speaker in the enclosure taught by Hoefler by turning the speaker 90° as taught by Furukawa for the benefit of customizing the sound dispersion characteristics based on the requirements of the design.

Regarding claim 2, the combination of Hoefler and Furukawa remains as applied above.

Hoeffler further teaches the coupling between the coupling section (Fig. 5a #18₁) and the first chamber has a smaller cross section (Fig. 5a 'A₁') than the first chamber.

Regarding claim 3, the combination of Hoeffler and Furukawa remains as applied above.

Hoeffler does not explicitly teach further teaches the enclosure being dimensioned so as to constitute a second-order acoustic system.

Hoeffler does explicitly teach, as an alternate design, that "[w]aveguide 14 may be closed ended" ('787 col. 3lines 9-10). One of ordinary skill in the art would recognize that a closed ended acoustic enclosure inherently serves as a second-order acoustic system. The acoustic system is modeled by a spring (compliance of the air within the enclosure) in combination with a mass (mass of the moving components of the speaker). Sealed enclosures provide the benefit of improving sound quality by reducing resonant peaks output from the enclosure.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the waveguide as taught by Hoeffler by closing the ends of the waveguide (taught by Hoeffler as a design variation) to allow it to function as a sealed box for the benefit of improving sound quality by reducing the resonant peaks of the enclosure.

Regarding claim 4, the combination of Hoeffler and Furukawa remains as applied above.

See rejection of claim 3 above, where Hoefler teaches that "Waveguide 14 may be closed ended" '787 col. 3lines 9-10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the waveguide as taught by Hoefler by closing the ends of the waveguide (taught by Hoefler as a design variation) to allow it to function as a sealed box for the benefit of improving sound quality by reducing the resonant peaks of the enclosure.

Regarding claim 5, the combination of Hoefler and Furukawa remains as applied above.

Hoefler further teaches a third chamber (Fig. 5a #18₄) which is acoustically coupled with the first chamber (Fig. 5a *surrounding* #10) or the second chamber (Fig. 5a #18₂) by a further coupling section (Fig. 5a #18₃).

Regarding claim 6, the combination of Hoefler and Furukawa remains as applied above.

Hoefler further teaches the further coupling section (Fig. 5a #18₃) having a smaller diameter (Fig. 5a 'A₃') than at least one of the first chamber (Fig. 5a *surrounding* #10), the second chamber (Fig. 5a #18₂) and the third chamber (Fig. 5a #18₄).

Regarding claim 7, the combination of Hoefler and Furukawa remains as applied above.

Hoefer further teaches the first chamber (Fig. 5a *surrounding #10*), the second chamber (Fig. 5a #18₂) and the third chamber (Fig. 5a #18₄) constitute a three-dimensional arrangement (Fig. 5a *illustrates a waveguide with length, height, and a cross-sectional area (depth)*).

Regarding claim 8, the combination of Hoefer and Furukawa remains as applied above.

Hoefer does not explicitly teach the second chamber having a longitudinal direction which is substantially perpendicular to a longitudinal direction of the first chamber.

Examiner takes official notice that one of ordinary skill in the art, at the time of the invention would, with a minimal amount of experimentation, know to position the second chamber, such that the longitudinal direction would be substantially perpendicular to the longitudinal direction of the first chamber. Hoefer explicitly teaches "the waveguide may be curved to be a desired shape, to fit into an enclosure, or to position one end of the waveguide relative to the other end of the waveguide" (col. 3 lines 18-20).

It would have been obvious to one of ordinary skill in the art at the time of the invention to, based on the teachings of Hoefer, and the requirements of the design of a particular enclosure, in which the waveguide is to be placed, to position the second chamber, such that the longitudinal direction would be substantially perpendicular to the longitudinal direction of the first chamber for the benefit of fitting the waveguide into an existing enclosure volume.

Regarding claim 9, the combination of Hoefler and Furukawa remains as applied above.

Hoefler further teaches a transducer (Fig. 5a #10), wherein the transducer is within the first chamber located at the opening of the first chamber (Fig. 5a).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoefler et al. (US Patent 6,771,787 ('787)) (already of record) in view of Furukawa (US Patent 4,953,655 ('655)) as applied to claim 1 above, and further in view of Taddeo (US Patent 4,276,446 ('446)) (already of record).

Regarding claim 10, Hoefler remains as applied above.

Hoefler does not explicitly teach the enclosure comprising two or more transducers.

In the same field of endeavor, Taddeo teaches an acoustic transducer system wherein multiple driven speakers are included in respective chambers ('446 Fig. 1) for the benefit of creating multiple chamber/speaker combination, each tuned to a different frequency band.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include a tuned waveguide as taught by Hoefler in combination with a second chamber/speaker combination as taught by Taddeo for the benefit of creating a transducer system tuned to multiple frequency bands.

Response to Arguments

9. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **JESSE A. ELBIN** whose telephone number is (571)270-

3710. The examiner can normally be reached on Monday through Friday, 9:00am to 6:00pm EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. A. E./
Examiner, Art Unit 2614
/CURTIS KUNTZ/
Supervisory Patent Examiner, Art Unit 2614